A positional determination can be carried out with a required level of accuracy in respect of a diversity method executed on the transmit side only with a high resource requirement, or cannot be carried out at all, as a result of the multipath propagation and the different signal propagation delays in the respective carrier units.

Corresponding problems occur for runtime dependent or runtime critical system parameters or system properties in respect of the data transmission, for example in the case of a "synchronized handover" or a "pseudo-synchronized handover".

The object of the present invention is to set down a method for data transmission in a wireless communication system in such a manner that advantages of a diversity method used on the transmit side can be used whilst largely avoiding disadvantages caused by multipath propagation.

The object of the invention is achieved by the features of Claim 1. Advantageous developments are set down in the subclaims.

By using the method according to the invention in a wireless communication system employing a transmit diversity method it is possible to ascertain with a sufficient level of accuracy runtime critical system parameters, for positional determination for example, by using the reference signal.

It is particularly advantageous to retain the radio cell size or the supply range for all subscribers assigned to a radio cell during the determination of the runtime critical system parameters since the subscriber data is moreover emitted as user data by way of at least two of the antenna devices on the transmit side.

The reference signal is used for ascertaining signal propagation delays, which need to be determined precisely, for the runtime critical system parameters.

In the case of wireless communication systems using time division multiple access methods, in which the individual subscriber signals

Claims

1. Method for data transmission in a wireless communication system,
- in which a subscriber data signal and a reference signal are assigned to a subscriber,
- in which the subscriber data signal is emitted on the transmit side by way of at least two antenna devices, and
- in which the reference signal is emitted on the transmit side by way of one single antenna device.

2. Method according to Claim 1, in which the reference signal is emitted periodically at predefined time intervals or aperiodically at time intervals selected at random.

3. Method according to Claim 1 or 2, in which the reference signal is sent alternately by way of one of the at least two antenna devices in each case.

4. Method according to one of the preceding claims, in which the reference signal is used for a positional determination for the subscriber based on a signal propagation delay measurement.

5. Method according to Claims 3 and 4, in which a receive-side assessment of the measured signal propagation delays of the alternately sent reference signal takes place and that antenna device for emission of the reference signal is selected for further positional determinations whose propagation path best corresponds to a line-of-sight criterion.

6. Method according to Claim 4 or 5, in which the positional determination is performed with the aid of the timing advance mechanism.

7. Method according to one of the preceding claims, in which the subscriber data signal and the reference signal are transmitted with the aid of a time division multiple access method.

8. Method according to Claim 7, in which a training sequence of a time slot being used for synchronization is used as the reference signal.

9. Method according to Claim 8, in which with regard to a GSM mobile radio system an extended training sequence of the SCH time slot is used as the reference signal.

10. Method according to one of the preceding claims, in which reference signals are stored on the transmit side in manufacturer specific form in a table.

11. Method according to one of the preceding claims, in which at least two antenna devices having polarizations orthogonal to one another or at least two antenna devices having the same polarization which have a fixed distance between one another are used.